

MICROFABRICATED FLUIDIC CIRCUIT ELEMENTS AND APPLICATIONS

ABSTRACT OF THE DISCLOSURE

The present invention provides microfabricated fluidic systems and methods. Microfabricated fluidic devices of the present invention include switches that can be opened and closed to allow or block the flow of fluid through a channel in response to the pressure level in a gate of the switch. The microfabricated fluidic switches may be coupled together to perform logic functions and Boolean algebra, such as inverters, AND gates, NAND, gates, NOR gates, and OR gates. The logic gates may be coupled together to form flip-flops that latch signals. The present invention also includes microfabricated fluidic pressure multipliers that increase the pressure in a second chamber relative to a first chamber. Microfabricated fluidic devices of the present invention also include pressure sources. A pressure source of the present includes a pump coupled to a reservoir through unidirectional valves. The pressure source may be high pressure source or a low pressure source. Microfabricated fluidic devices of the present invention may also include devices that perform analog functions such as switching regulator.

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